CONSTRUCTION CAREERS

IN

NOVA SCOTIA

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PREFACE

Construction Careers in Nova Scotia is a counselling document on the Nova Scotia construction sector which provides students and other individuals with information helpful in choosing a career in the construction sector. It includes information on labour market conditions, general working conditions, and other factors important to potential entrants. Although it focuses primarily on the construction trades, it also provides insight into other opportunities available in the construction sector.

Information in the document was obtained from Statistics Canada, Canadian Occupational Projection System (COPS), Conference Board of Canada, the 1986 Census, and through direct contact with individuals working in the sector. Information was assembled objectively incorporating concerns from labour and management. Every effort was made to verify the information contained in this document at the time of printing. However, as time passes the statistical information is subject to change and individuals are encouraged to do additional research as it relates to their occupation of choice.

LIST OF DEFINITIONS

Construction Industry - a group of firms engaged primarily in construction activity.

Construction Sector - aggregation of all construction industries.

COPS - (Canadian Occupational Projection System) a model used to project net employment requirements.

Journeyperson - a person holding a certificate of qualification in a trade which signifies he/she is fully competent in performing the trade.

Labour Force - the number of people either employed or actively seeking work.

Seasonality - systematic changes in activity resulting from characteristics of particular seasons.

Unemployment - the number of people either employed or actively seeking work.

I. Introduction

The construction sector plays a vital role in an economy, converting financial investment to physical assets and infrastructure, such as industrial plants, buildings, and roads. The creation of these fixed assets is important because it enables other economic activity to take place and, hence, economic growth and development. Although the construction sector contributed 7% of Nova Scotia's Gross Domestic Product (GDP) in 1989, it is essential to comprehend the interrelatedness the construction sector has with other sectors to fully appreciate its significance in the economy. The construction industry plays a direct role in the establishment and growth of many other industries since a wide variety of inputs such as lumber, steel, cement, concrete, gyproc, etc. are required for construction projects. In addition, the output from the construction industry is used in the production chain of other industries. For example, oil platforms and other physical structures are needed before oil can be pumped and refined for retail sale. Furthermore, increased economic activity results as income is generated and spent on other goods and services such as housing, barbering, entertainment, health, education, etc.

Since approximately 23,000 or 6.2% of employed Nova Scotians worked in the construction sector in 1989, it is obvious that employment opportunities do exist here. Considerations that should be taken into account before embarking on a career in this sector include skill requirements and specific jobs available, labour market conditions, seasonality, wages, working conditions, job stability, and economic, demographic and technological factors affecting the sector, etc. In sum, while the construction sector should not be regarded as the engine of growth, it does contribute significantly to the economy in terms of output, income, and employment generation, both directly and indirectly through complementing other industries. The purpose of this document is to identify some of the main characteristics of the construction sector and to answer questions that interested individuals deciding on a career may have concerning this sector.

II. Industrial Profile

The composition of expenditure on construction activity is described in Table 1. Construction sector activity is classified under two broad categories: building construction and engineering construction. Falling under each of these are several subsectors. As over two thirds of construction expenditure is spent on building construction, construction workers are most likely to end up working in this category. Those working in the building construction sector could be working on any type of building ranging from residential houses to hospitals. Engineering construction can involve anything from airport runways to gas and oil platforms. Residential construction is the largest subsector and is expected to represent close to forty percent of construction expenditure in 1990. New construction is expected to represent over eighty percent of total construction in 1990. There has been no major shift between new and repair construction over the decade.

TABLE 1

PROJECTED VALUE OF NOVA SCOTIA CONSTRUCTION WORK,
BY TYPE OF STRUCTURE, NEW & REPAIR, 1990
(THOUSANDS OF DOLLARS)

	NEW	REPAIR	TOTAL	
TOTAL VALUE OF CONSTRUCTION	**2,167,659**	**559,748**	**2,727,407**	**100.0%**
TOTAL BUILDING CONSTRUCTION	**1,513,061**	**339,427**	**1,852,488**	**67.9%**
RESIDENTIAL	862,975	160,312	1,023,287	37.5%
COMMERCIAL	285,614	83,257	368,871	13.5%
INSTITUTIONAL	197,817	34,215	232,032	8.5%
OTHER BUILDING CONSTRUCTION	90,514	37,219	127,733	4.7%
INDUSTRIAL	76,141	24,424	100,565	3.7%
TOTAL ENGINEERING CONSTRUCTION	**654,598**	**220,321**	**874,919**	**32.1%**
ROAD,HIGHWAY,& AIRPORT RUNWAY	157,131	101,578	258,709	9.5%
ELECTRIC POWER	146,686	20,660	167,346	6.1%
WATERWORKS & SEWAGE	69,250	13,028	82,278	3.0%
MARINE	46,855	11,054	57,909	2.1%
GAS & OIL FACILITIES	19,017	14,564	33,581	1.2%
DAMS & IRRIGATION	6,777	1,235	8,012	0.3%
RAILWAY, TELEPHONE & TELEGRAPH	X	22,023	X	X
OTHER ENGINEERING CONSTRUCTION	X	34,424	X	X

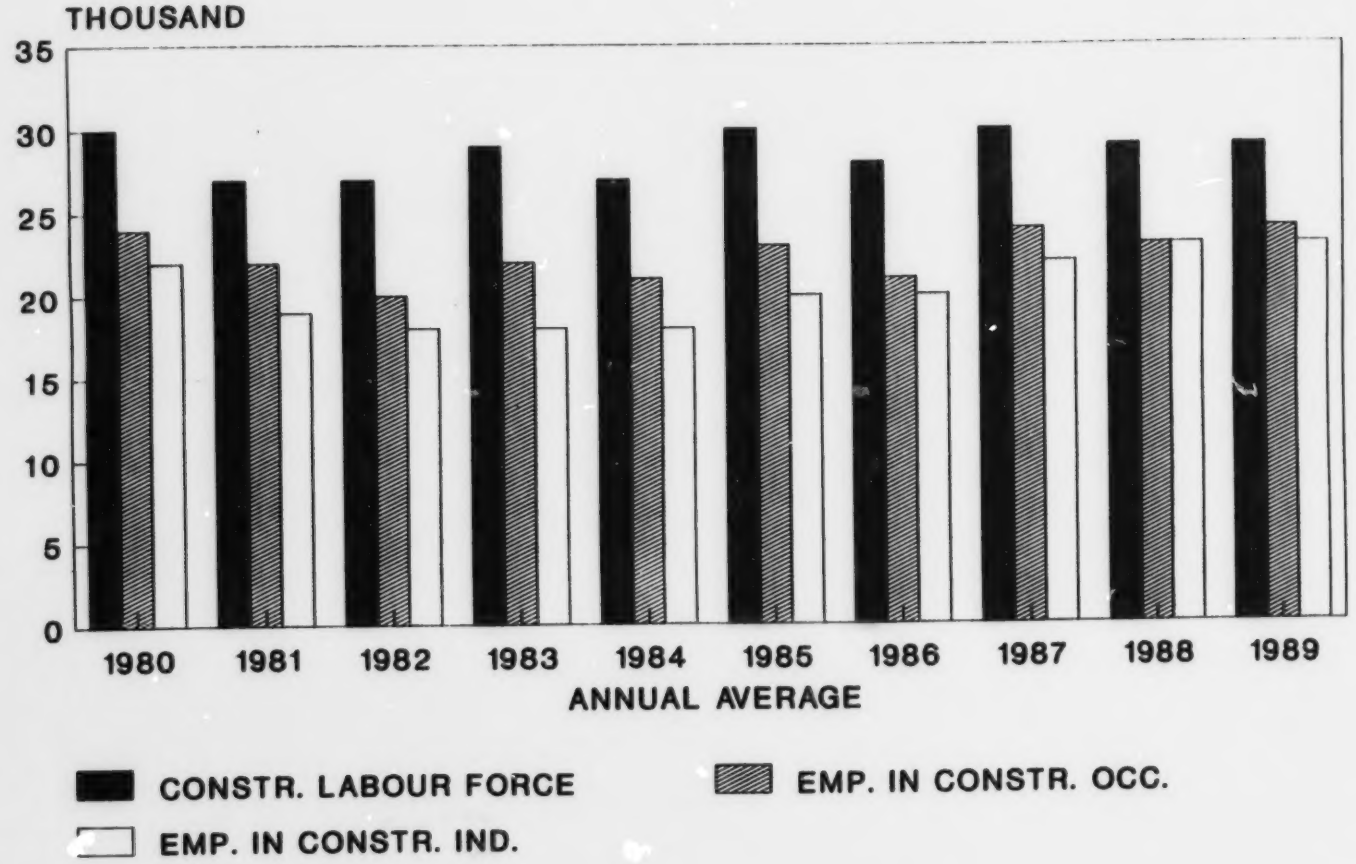
SOURCE : STATISTICS CANADA (CAT. 64-201)

III. Labour Market

Occupations are classified according to the Canadian Classification and Dictionary of Occupations (CCDO), while industry classification is in accordance with the Standard Industrial Classification (SIC). As shown in Chart 1, the labour force in the construction sector has been relatively stable over the past decade. According to the Labour Force Survey, the average annual labour force in the construction sector was 7% (29,000) of the total (414,000) in 1989. Growth in the construction sector labour force appeared to alternate between positive and negative for most of the decade. The construction sector employed 6.2% (23,000) of the total employment (373,000) in the Province in 1989. As displayed in the chart, employment was slightly higher in construction occupations which indicates that some are working at construction occupations outside the sector itself. In 1989, 6.4% (24,000) of the total employed (373,000) were working at construction occupations.

People working in construction related occupations are not necessarily limited to employment within the construction sector. For example, a worker who has obtained a job doing building repairs

CHART 1
NOVA SCOTIA CONSTRUCTION SECTOR
LABOUR MARKET ACTIVITY

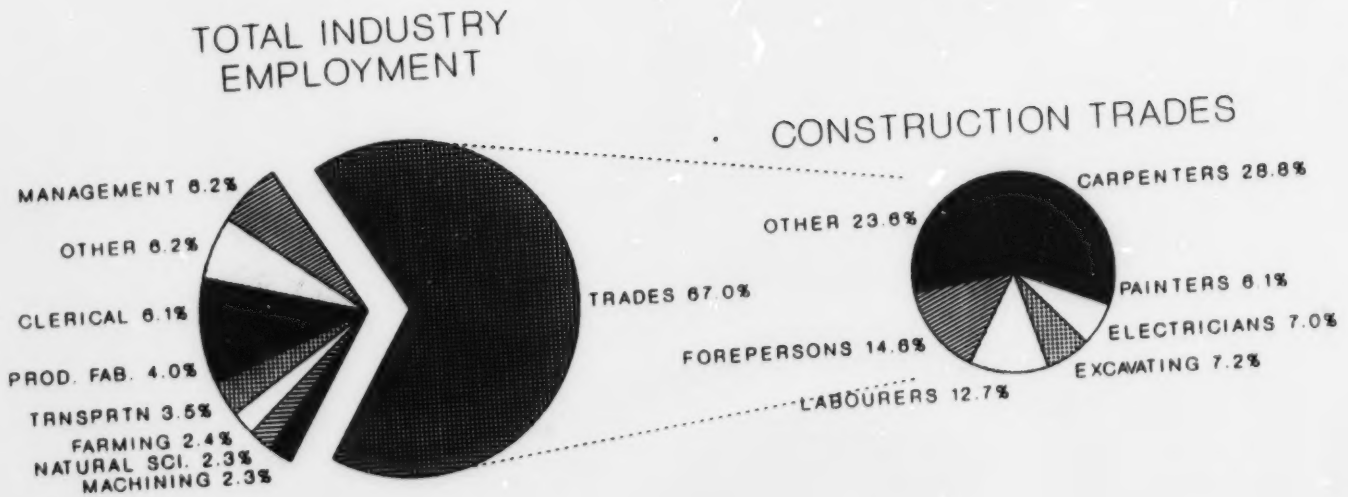


SOURCE : LABOUR FORCE SURVEY

in a manufacturing plant is working in a construction occupation although employed in the manufacturing sector.

Conversely, within the construction sector, people are employed in a wide variety of occupations and are not limited to the conventional on-site trades. As with any other sector, a broad range of tasks are required for the successful operation of business, thus people work in many fields ranging from general labour to construction trades to management. According to the Canadian Occupational Projection System (COPS), two-thirds of the occupations in the construction industry are classified as construction trades. Managerial and clerical occupations comprise 6.2% and 6.1% of the employment in the construction sector, respectively. The remaining employment (20.7%) is scattered thinly across product fabricating (i.e. cabinet makers, steel fabricators, etc.), transportation (i.e. truck drivers, etc.), farming (i.e. landscapers, etc.), machining (i.e. wood pattern makers, etc.), natural sciences (engineers, architects, etc.), and a number of other occupations. Chart 2 illustrates the composition of employment in the construction sector.

CHART 2
MAJOR OCCUPATIONAL COMPOSITION OF THE CONSTRUCTION SECTOR



SOURCE : COPS DEMAND MODEL, 1991

Although this document focuses on construction trades, it should be stressed that these are not the only opportunities available within the construction sector. Construction trades are defined here as those occupations falling under Major Group 87 of the CCDO - Construction Trades Occupations. However, there are other occupations outside of this major group that are recognized by the industry as either construction occupations or closely related. These occupations include quantity surveyors, specification writers, architects, engineers, construction salespeople, etc. In addition, there are occupations at the management level considered construction related occupations. Such occupations require some experience and a thorough understanding of all aspects of construction work. Since much of the conventional site work such as lifting, climbing, digging, etc. can be avoided, some individuals may find themselves more suited for these types of occupations. Technical and management training is offered at the various campuses within the community college system, and the Technical University of Nova Scotia (TUNS), depending on the specific occupation. Appendix A lists all occupations and employment within the construction sector.

Table 2 lists the employment levels as of 1990 for all construction trade workers regardless of whether they are working in the construction, manufacturing, agricultural, or any other sector. Including all sectors, the construction trades with the highest levels of employment are as follows: carpenters (5751), forepersons (3266), and labourers (2577). Combined, these occupations represent almost 50% of the total employment in construction trades. More significantly, carpenters represented almost a quarter (23.5%) of the employment in construction occupations, which is not surprising as practically every phase of building requires the skill of a carpenter. The high level of employment in labouring occupations suggests there is a significant percentage of unskilled labour in construction occupations. However, those interested in the construction sector should focus on the skilled trades that can perhaps lead to the higher paying supervisory or management positions.

According to COPS, most of the annual employment openings in a trade will result from attrition rather than employment growth. Attrition refers to job openings that occur through illness,

TABLE 2

TOTAL EMPLOYMENT BY TRADESPERSON

CCDO	TITLE	EMPLOYMENT	PERCENTAGE
8710	Foreperson–Excav.	368	1.5%
8711	Excavating+Grading	1860	7.6%
8713	Paving+Surfacing	289	1.2%
8715	Railway Workers	228	0.9%
8718	Labour–Excavating	210	0.9%
8719	Excavating–Nec	68	0.3%
8730	Foreperson–Elec Pow.	699	2.9%
8731	Power Line Workers	544	2.2%
8733	Constr Electricians	1880	7.7%
8735	Wire Communications	1309	5.4%
8736	Inspect–Elec Power	109	0.4%
8738	Labour–Elec Power	19	0.1%
8739	Electrical Power–Nec	137	0.6%
8780	Foreperson–Othr Con.	2199	9.0%
8781	Carpenters	5751	23.5%
8782	Masons	679	2.8%
8783	Concrete Finishing	142	0.6%
8784	Plasterers	376	1.5%
8785	Painters	1393	5.7%
8786	Insulating	189	0.8%
8787	Roofing	276	1.1%
8791	Pipefitting+Plumbing	1214	5.0%
8793	Structural–Metal	196	0.8%
8795	Glaziers	277	1.1%
8796	Inspecting–Constr	137	0.6%
8798	Labour–Other Constr	2348	9.6%
8799	Other Constr–Nec	1565	6.4%
TOTAL		24462	100.0%

SOURCE : COPS DEMAND MODEL, 1991

retirement, death, or migration, not new job creation. Table 3 lists COPS projections on the annual employment openings for the construction trades. Generally, job openings are most likely to occur in the occupations with the highest current employment levels.

The ability to obtain available jobs depends on a number of factors such as mobility, work experience, and skill levels. The Community College Graduate Follow-Up Survey Report 1990 provided some labour market data on new entrants. Of the programs where data was available in 1990, building technology (100.0%) had the highest percentage of graduates employed in related work followed by construction administration technology (85.7%), land surveying (75.0%), carpenters (68.1%), machine shop (56.0%), bricklayers (50.0%), electrical construction wirers (47.6%), plumbers (46.9%), and drafting-architectual (38.2%). It is obvious that employment statistics vary significantly among construction trades.

TABLE 3

PROJECTED ANNUAL EMPLOYMENT OPENINGS

CCDO	OCCUPATION	ANNUAL EMPLOYMENT OPENINGS (1990–1995)
8781	CARPENTERS	629
8780	FOREPERSONS–OTHER CONSTRUCTION	292
8798	LABOUR–OTHER CONSTRUCTION	280
8791	PIPEFITTING/PLUMBING	177
8711	EXCAVATING/GRADING	164
8785	PAINTERS	137
8733	CONSTRUCTION ELECTRICIANS	106
8782	MASONS	75
8735	WIRE COMMUNICATION	61
8784	PLASTERERS	53
8730	FOREPERSONS–ELECTRICAL POWER	42
8787	ROOFING	41
8731	POWER LINEPERSONS	40
8710	FOREPERSONS–EXCAVATING	34
8793	STRUCTURAL–METAL	30
8718	LABOUR–EXCAVATING	28
8795	GLAZIERS	27
8783	CONCRETE FINISHERS	26
8796	INSPECTING–CONSTRUCTION	23
8786	INSULATING	19
8715	RAILWAY SECTIONPERSONS	12
8713	PAVING/SURFACING	10
8719	EXCAVATING–NEC	8
8739	ELECTRICAL POWER	7
8736	INSPECTING–ELECTRICAL POWER	7
8738	LABOUR–ELECTRICAL POWER	5
8799	OTHER CONSTRUCTION–NEC	3

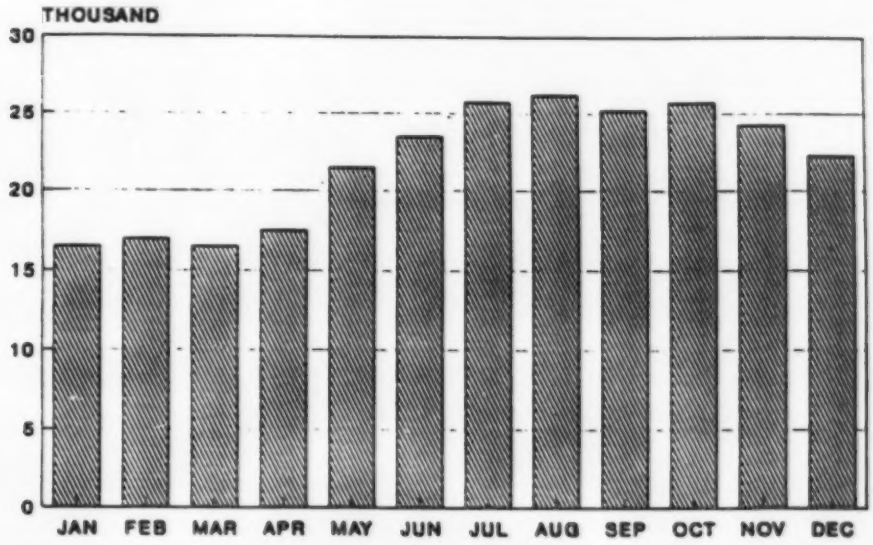
SOURCE : CANADIAN OCCUPATIONAL PROJECTION SYSTEM, 1990

IV. Seasonality

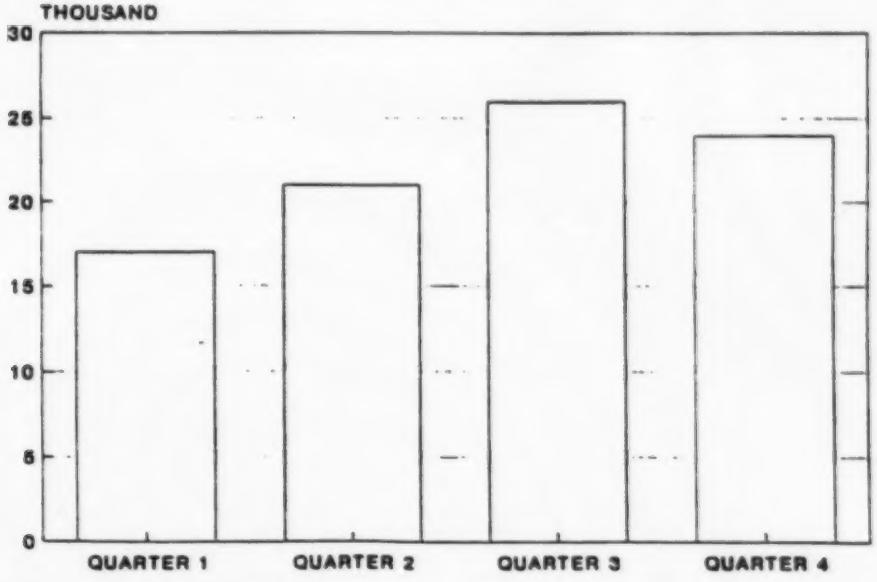
Those interested in a career in the construction sector should be aware that there is a strong influence of seasonality associated with some of the occupations, as shown by the higher levels of labour market activity during some months of the year. It is evident from Chart 3 that peak employment occurs during the third quarter (July, August, September). During the third quarter, employment in construction industries averaged over 25,000. In contrast, the first quarter (January, February, March) had the lowest employment level with just over 15,000 employed. An average of the years 1986-1989 was used in order to smooth out any irregularities that may be present. However, some occupations may be completely insulated from any seasonal influences.

Table 4 and Chart 4 show weekly hours averaged over four years (1986-89). According to Statistics Canada Employment, Earnings, and Hours data, hourly paid workers, comprising approximately 75% of construction workers, worked relatively the same number of weekly hours (39.7) as salaried workers (39.9). However, weekly hours fluctuated from month to month for workers paid by the hour, but stayed relatively constant for salaried workers. Comparing

CHART 3
EMPLOYMENT IN CONSTRUCTION INDUSTRIES
MONTHLY AVERAGES (1986-1989)

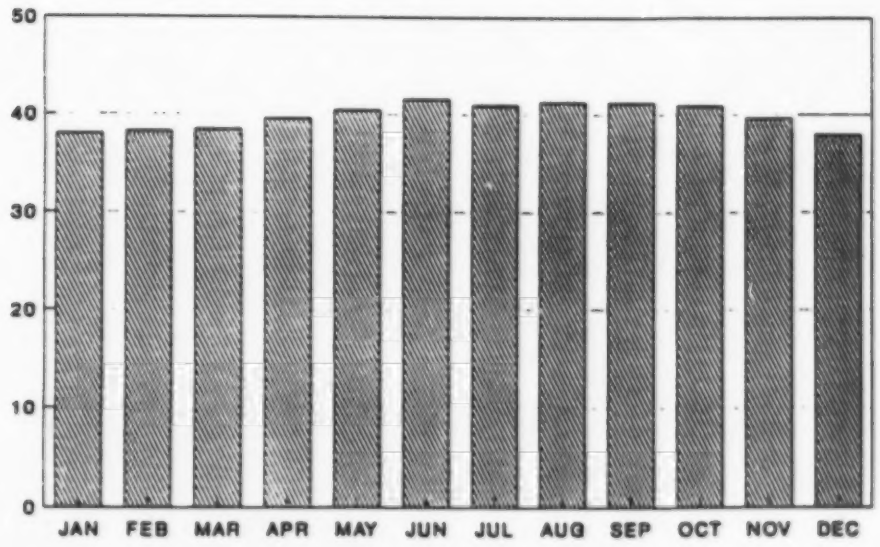


EMPLOYMENT IN CONSTRUCTION INDUSTRIES
QUARTERLY AVERAGES (1986-1989)



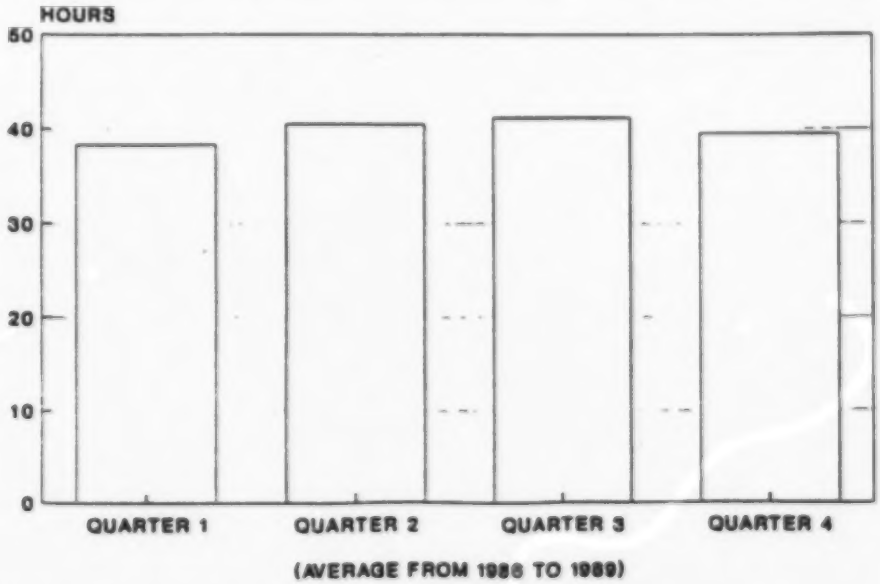
SOURCE : LABOUR FORCE SURVEY

CHART 4
AVERAGE WEEKLY HOURS OF HOURLY PAID EMPLOYEES IN CONSTRUCTION INDUSTRIES



MONTHLY AVERAGES (1986-1989)

AVERAGE WEEKLY HOURS OF HOURLY PAID EMPLOYEES IN CONSTRUCTION INDUSTRIES



(AVERAGE FROM 1986 TO 1989)

SOURCE : EMPLOYMENT, EARNINGS, AND HOURS

TABLE 4

AVERAGE WEEKLY HOURS OF EMPLOYEES PAID BY THE HOUR BY INDUSTRY (1986-89)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AA
CONSTRUCTION	38.0	38.3	38.4	39.6	40.4	41.6	40.9	41.3	41.2	40.9	39.7	38.0	39.9
BUILDING	37.5	37.7	37.7	38.8	39.7	40.5	39.8	40.0	40.0	39.8	38.8	37.7	39.0
GENERAL CONTRACTORS	37.2	38.2	37.6	38.4	38.4	39.3	39.3	38.9	39.1	38.3	38.7	38.0	38.4
SPECIAL TRADE CONTRACTORS	37.6	37.5	37.8	39.1	40.3	41.1	40.0	40.6	40.4	40.6	38.9	37.5	39.3
ENGINEERING	42.3	43.0	43.4	44.3	44.0	46.4	46.6	46.7	46.5	45.9	43.6	40.3	44.4
HWYS,BRIDGES & STREETS	41.2	41.7	42.6	43.6	45.1	47.3	47.3	46.7	46.3	46.0	43.3	39.3	44.2
OTHER ENGINEERING	43.2	43.9	43.9	45.0	42.5	44.5	45.3	46.6	46.7	45.6	43.9	41.2	44.4

AVERAGE WEEKLY HOURS OF SALARIED EMPLOYEES BY INDUSTRY (1986-89)

CONSTRUCTION	39.6	39.7	39.6	39.7	39.8	39.8	39.7	39.6	39.8	39.8	39.8	39.7	39.7
BUILDING	39.7	39.8	39.7	39.7	39.8	39.8	39.6	39.7	39.7	39.8	39.9	39.8	39.8
GENERAL CONTRACTORS	39.8	39.8	40.0	39.7	39.7	39.8	39.7	39.9	40.1	40.0	40.1	40.2	39.9
SPECIAL TRADE CONTRACTORS	39.7	39.8	39.6	39.7	39.8	39.8	39.6	39.6	39.5	39.7	39.8	39.7	39.7
ENGINEERING	39.1	39.1	39.2	39.5	39.5	39.7	39.8	39.4	39.7	39.6	39.6	39.3	39.4
HWYS,BRIDGES & STREETS	41.3	41.7	41.8	42.4	42.2	42.5	42.5	42.3	42.8	42.5	42.6	42.2	42.2
OTHER ENGINEERING	37.8	37.7	37.7	37.7	37.9	38.0	37.9	37.8	37.7	37.7	37.7	37.6	37.7

SOURCE : STATISTICS CANADA (CAT. 72-002)

construction sub-sectors, there was no significant variance among salaried workers, but hourly paid workers in the engineering construction sub-sector worked significantly longer work weeks (44.4 hours) compared to the building construction sub-sector (39.0 hours). Looking again at the monthly fluctuations for hourly paid workers, weekly hours are the highest for the months May through to October and are the lowest during the first quarter (January, February, March), consistent with the seasonal nature of the construction sector. It should be noted, however, that the trades are more likely to be influenced by the seasons than the other non - trade construction occupations.

The higher employment levels and longer working weeks in the third quarter likely are a result of more favourable working conditions. Warmer temperatures and more daylight hours improve worker productivity and lengthen work periods, which likely encourage more construction projects. It is likely that some construction workers anticipate layoffs and shorter work weeks during the colder months and try to compensate by working longer days during the third quarter months. Also, the fact that these months are ideal moving periods may mean more of a demand for residential construction. Other types of construction, such as road and highway and marine port projects, may be difficult to undertake during the colder

months due to snow and ice. In sum, the seasonality factor will influence the number and types of construction projects undertaken and, therefore, those interested in working in the construction sector should be fully aware that hours may vary, and they may become unemployed during the colder months of the year. Possible alternative sources of employment during winter months should be considered.

V. Wages

Data on salary levels among construction workers was obtained from the 1986 census. Although these figures do not reflect current salary levels, comparisons of the individual trade occupations can provide an insight into the better paying jobs. Table 5 lists the average salaries for selected construction trades as of 1985, for both sexes, full year and full time. The average salary for all construction workers was $25,428. The average salary for females ($20,332) was significantly below that of males ($25,491). Individual salaries ranged from a high of $34,725 for electrical power forepersons to a low of $17,020 for roofers. Foreperson occupations and electrical occupations comprise the five top paying occupations among the list of construction occupations. It should be stressed that these are average annual earnings as of 1985, and actual annual earnings could vary significantly, depending on such factors as location of work, hours of work, unionization, etc.

The hourly rates of pay are fixed by collective agreement for unionized journeypersons or by individual negotiation for non-unionized journeypersons. Table 6 lists the hourly journeyperson

TABLE 5

AVERAGE SALARIES FOR SELECTED CONSTRUCTION TRADES AS OF 1985, BOTH SEXES, FULL YEAR, FULL TIME

CCDO	TITLE	AVERAGE SALARY
8730	FOREPERSON-ELECTRICAL POWER	$34,725
8780	FOREPERSON-OTHR CONSTRUCTION	$30,894
8735	WIRE COMMUNICATIONS	$30,400
8710	FOREPERSON-EXCAVATING	$30,089
8731	POWER LINE WORKERS	$29,727
8786	INSULATING	$27,334
8733	CONSTR ELECTRICIANS	$26,299
8791	PIPEFITTING+PLUMBING	$25,410
8793	STRUCTURAL-METAL	$24,239
8715	RAILWAY WORKERS	$23,827
8782	MASONS	$23,581
8711	EXCAVATING+GRADING	$23,543
8784	PLASTERERS	$22,631
8799	OTHER CONSTRUCTION-NEC	$21,931
8795	GLAZIERS	$20,962
8718	LABOUR-EXCAVATING	$20,737
8798	LABOUR-OTHER CONSTRUCTION	$20,576
8713	PAVING+SURFACING	$20,498
8781	CARPENTERS	$20,328
8785	PAINTERS	$19,159
8787	ROOFING	$17,020
87	MALE	$25,491
	FEMALE	$20,332
	TOTAL	$25,428

SOURCE : 1986 CENSUS (CAT. 93-116)

TABLE 6

HOURLY WAGE RATES FOR UNIONIZED JOURNEYPERSONS AS SPECIFIED IN CONTRACTUAL AGREEMENTS, 1990

OCCUPATION	VACATION/HOLIDAY	TOTAL WAGE
BRICKLAYER	9.0%	$23.64
CARPENTER *	8.0%	$17.72–$21.79
CEMENT MASON	6.0%	$16.90
ELECTRICIAN	9.0%	$21.51
INSULATOR	9.0%	$26.32
LABOURERS *	8.0%	$12.19–$16.88
PAINTER *	8.0%	$16.34–$19.27
ROOFER *	8.0%	$17.14–$19.61
STEEL ERECTOR	9.0%	$20.99

* RATE VARIES BY COUNTY

SOURCE : CONSTRUCTION MANAGEMENT BUREAU LIMITED

rates including vacation and holiday pay. In addition to the wage rate, height pay (work performed at or above a specified height above the ground) and travelling allowances are also stipulated in most contracts. The wage rate for a foreperson is usually a specified amount above the journeyperson rate. The wage rate for apprentices is a certain proportion of the journeyperson wage, increasing with each stage of the apprenticeship. For example, the starting wage for a carpenter apprentice in 1990 is $14.68. This can reach as high as $20.77 upon completion of the final stages of the apprenticeship.

Unlike some of the trade occupations where earnings are somewhat fixed by predetermined hourly wages, the salary level for some construction occupations may be unlimited. The earning potential for some construction related occupations such as managerial positions, mentioned earlier, is likely to be much higher given the knowledge, experience, and responsibility required for the job. Furthermore, salaries in construction sales occupations may be supplemented by commission sales.

VI. Entering a Construction Trade

The most common method of becoming a tradesperson is through the apprenticeship program. Apprenticeship is a method of training involving on-the-job training supplemented with blocks of classroom theory. An individual can take one of three approaches to become an apprentice. The most common method involves graduating from the community college system and then securing employment in the trade before applying to the Director of Apprenticeship for an apprenticeship. For the second method, the individual must take twenty four weeks of pre-employment training as prescribed by EIC before finding employment and applying for apprenticeship. In the third approach, the pre-employment theory is waived provided the individual can demonstrate, through a written examination, that he/she has experience in the trade and has a sound knowledge of the initial classroom theory that is required for the previous two methods of entry. Once granted apprenticeship status, the apprentice and employer sign an agreement that specifies all the conditions that must be met including length of time, leave for classroom theory, pay scale, etc. The average length of time of an apprenticeship is four years. Upon successful completion, the

apprentice is issued a Certificate of Qualification indicating the holder is a qualified journeyperson.

Alternatively, some individuals gain knowledge of a trade by working for a period of time as a tradesperson's helper or assistant. Once the required knowledge and skills of the trade are developed, he/she may decide to practice the trade as a qualified journeyperson in the Province.

For safety reasons, provincial certification is required before some trades can be practised and must be renewed every five years. Table 7 lists the apprenticeable construction trades, noting those requiring certification before they can be practiced. All construction trades are eligible for "red seal" certification, meaning a license to practice in other provinces can be obtained upon scoring 70% or higher on a standardized inter-provincial examination.

The usual path of advancement for most construction trades is from apprentice to journeyperson, to foreperson, and then to construction superintendent or contractor. However, careers in the construction sector are not limited to on-site occupations. Training and experience in trades can be put to use securing

TABLE 7

APPRENTICEABLE CONSTRUCTION TRADES IN NOVA SCOTIA

CCDO	TRADE	COMPULSORY CERTIFICATION
8782	BRICKLAYING	YES
8781	CARPENTER	NO
8733	ELECTRICAL CONSTRUCTION	YES
8735	LINEMAN	NO
8785	PAINTING AND DECORATING	NO
8791	PLUMBING	YES
8786	REFRIGERATION AND AIR CONDITIONING	YES
8799	RESIDENTIAL OIL BURNER MECHANIC	YES
8782	RESTORATION STONE MASON	NO
8787	ROOFING	NO
8791	SPRINKLER FITTER	NO
8791	STEAMFITTING	NO

SOURCE : N.S. DEPARTMENT OF ADVANCED EDUCATION AND JOB TRAINING, INDUSTRIAL TRAINING DIVISION

employment in other areas such as sales, education, management, consulting, etc. As an additional alternative, there is also the opportunity of starting up one's own small enterprise, but this is not recommended before considerable training and practical experience in a trade.

VII. Job Requirements and Working Conditions

Before deciding on a career as a tradesperson in the construction sector, there are a number of qualifications one should have. First, it is important for an individual to be in good physical condition because of the heavy lifting, straining and other physical demands involved with some trades. Since much of the work will be performed outside, a liking for the outdoors is important as exposure to weather conditions, such as wind, rain, snow, cold temperatures, etc., is common. Other trades may be performed entirely inside and only under dry conditions. More commonly, there is a split between inside/outside work, and workers should have the ability to adapt to any type of situation since conditions may be varied from clean, dry, quiet, and spacious to cold, wet, noisy, and cramped.

The degree of relatedness among construction trades is such that good communication skills are extremely important. Poor judgement and lack of communication can result in financial losses, time delays, and personal injury. In addition to requiring the individual to think logically and make sound decisions, some trades may be very technical and therefore require individuals to possess

a knowledge and aptitude for mathematics and physics. The precision, craftsmanship, and tedious nature of some jobs will require the individual to have patience and good hand-eye coordination. For those looking ahead to supervisory positions, possessing strong leadership qualities will be another requirement.

With safety training programs, safer equipment, and government legislation to enforce safety regulations, accidents and injuries to construction workers have been greatly reduced. However, those prepared to work in the construction sector should be aware of the hazards and potential health problems associated with the various occupations when safety is ignored. Straining and failing to practice proper lifting procedures can lead to spinal problems and hernias. Some construction work involves using scaffolding, which can be dangerous, especially under windy or icy conditions. Falling off the scaffolding can mean death or lead to serious and permanent injury. Eye damage and the loss of fingers and limbs can result from careless power tool operation. Moreover, the operation of power tools and equipment without ear protection and other protective safety equipment can result in hearing deterioration and damage to the nervous system. To prevent respiratory problems, it is advised to wear proper breathing masks to filter out fumes, fibreglass, and other particles of harmful dust particles.

Electricians and lineworkers must always be aware of the hazards and take precautions when working with electrical currents and live wires. In addition to the above, individuals should also be aware of the possibilities of irregular hours, emergency calls, and seasonal work associated with work on a construction site.

However, although the health hazards and risks always exist, prudent work habits, safety equipment, and accident prevention training can mitigate these problems. Not only is safety stressed in the theory component of trades training, but employers often include it in staff training programs.

There are many benefits associated with working in the construction sector. One of the more interesting aspects of the construction sector is that tradespeople are not limited to on-site work and can diversify into different areas of work while still using their background. For example, construction sales and management positions may require a individual with a background in a particular construction trade, but are completely different lines of work than the conventional on-site construction activities. Some tradespeople cite the opportunity of working outside and doing physical work as being a benefit. Possessing skills and knowledge that can be put to use in practically any part of the country is

another advantage. In addition, the seasonal nature of some construction work may make it ideal for some individuals to pursue additional interests and careers during idle periods of the year.

VIII. Demographics

Information on sex and age distribution was obtained from the 1986 census. As indicated in Table 8, the labour force in the construction trades is dominated by men. Of the total number of construction trade workers (30,690) in the labour force in 1985, 98.4% were men. Interestingly, although only 1.6% of construction trade workers are women, almost a third are found in the 15-24 age category which suggests that more women are entering into construction trades. Looking at the age distribution of construction trade workers, almost one third (32.3%) were in the 25-34 age category, and over half (51%) were between the ages of 25 and 44 years.

Table 9 shows the age distribution of male construction trade workers by occupation. Of the three minor groups (excavating, electrical, and other construction), other construction trades (eg. carpenters, plumbers, painters, labourers, etc.) had the highest proportion (21.6%) in the 15-24 age category. In contrast, those working in or looking for excavating occupations appeared to be older with almost a third over 45 years of age. Examining the age

TABLE 8

LABOUR FORCE, AGE AND SEX COMPOSITION FOR CONSTRUCTION OCCUPATIONS AS OF 1986

AGE CATEGORY	MALE		FEMALE		TOTAL	
>= 15 YRS	30210	100.0%	480	100.0%	30690	100.0%
15–24 YRS	5715	18.9%	145	30.2%	5860	19.1%
25–34 YRS	9780	32.4%	135	28.1%	9915	32.3%
35–44 YRS	7165	23.7%	110	22.9%	7275	23.7%
45–54 YRS	4495	14.9%	60	12.5%	4555	14.8%
55–64 YRS	2820	9.3%	15	3.1%	2835	9.2%
>= 65 YRS	240	0.8%	25	5.2%	265	0.9%
>= 15 YRS	30210	98.4%	480	1.6%	30690	100.0%
15–24 YRS	5715	97.5%	145	2.5%	5860	100.0%
25–34 YRS	9780	98.6%	135	1.4%	9915	100.0%
35–44 YRS	7165	98.5%	110	1.5%	7275	100.0%
45–54 YRS	4495	98.7%	60	1.3%	4555	100.0%
55–64 YRS	2820	99.5%	15	0.5%	2835	100.0%
>= 65 YRS	240	90.6%	25	9.4%	265	100.0%

SOURCE : 1986 CENSUS (CAT. 93–112)

TABLE 9

MALE LABOUR FORCE 15 YEARS AND OVER BY CONSTRUCTION OCCUPATIONS, SHOWING AGE DISTRIBUTION

CCDO	TITLE	TOTALS		15–24		25–34		35–44		45–54		55–64		>=65	
871	EXCAVATING	4065	100.0%	530	13.0%	1125	27.7%	1055	26.0%	815	20.0%	520	12.8%	20	0.5%
8710	FOREPERSON-EXCAVATING	450	100.0%	5	1.1%	130	28.9%	110	24.4%	115	25.6%	85	18.9%	5	1.1%
8711	EXCAVATING+GRADING	2105	100.0%	265	12.6%	570	27.1%	580	27.6%	430	20.4%	255	12.1%	10	0.5%
8713	PAVING+SURFACING	405	100.0%	75	18.5%	180	44.4%	80	19.8%	45	11.1%	35	8.6%	X	X
8715	RAILWAY WORKERS	265	100.0%	25	9.4%	75	28.3%	60	22.6%	50	18.9%	55	20.8%	X	X
8718	LABOUR-EXCAVATING	590	100.0%	125	21.2%	100	16.9%	170	28.8%	115	19.5%	75	12.7%	X	X
ASSIGNED		140	100.0%	30	21.4%	20	14.3%	35	25.0%	40	28.6%	10	7.1%	X	X
873	ELECTRICAL	4910	100.0%	600	12.2%	1865	38.0%	1495	30.4%	520	10.6%	400	8.1%	35	0.7%
8730	FOREPERSON-ELEC POWER	670	100.0%	15	2.2%	155	23.1%	280	41.8%	115	17.2%	100	14.9%	5	0.7%
8731	POWER LINE WORKERS	510	100.0%	5	1.0%	210	41.2%	180	35.3%	75	14.7%	35	6.9%	X	X
8733	CONSTR ELECTRICIANS	2235	100.0%	370	16.6%	850	38.0%	660	29.5%	160	7.2%	165	7.4%	25	1.1%
8735	WIRE COMMUNICATIONS	1130	100.0%	150	13.3%	505	44.7%	280	24.8%	130	11.5%	60	5.3%	X	X
ASSIGNED		120	100.0%	25	20.8%	30	25.0%	30	25.0%	10	8.3%	30	25.0%	X	X
878/879	OTHER CONSTRUCTION	21230	100.0%	4585	21.6%	6790	32.0%	4615	21.7%	3160	14.9%	1900	8.9%	185	0.9%
8780	FOREPERSON-OTHR CON.	2425	100.0%	140	5.8%	595	24.5%	820	33.8%	545	22.5%	290	12.0%	35	1.4%
8781	CARPENTERS	7020	100.0%	1435	20.4%	2355	33.5%	1485	21.2%	950	13.5%	750	10.7%	50	0.7%
8782	MASONS	790	100.0%	240	30.4%	220	27.8%	165	20.9%	115	14.6%	45	5.7%	5	0.6%
8784	PLASTERERS	490	100.0%	105	21.4%	215	43.9%	170	34.7%	80	16.3%	25	5.1%	X	X
8785	PAINTERS	1800	100.0%	575	31.9%	500	27.8%	310	17.2%	270	15.0%	135	7.5%	5	0.3%
8786	INSULATING	280	100.0%	45	16.1%	90	32.1%	60	21.4%	60	21.4%	25	8.9%	X	X
8787	ROOFING	380	100.0%	125	32.9%	135	35.5%	85	22.4%	20	5.3%	15	3.9%	X	X
8791	PIPEFITTING+PLUMBING	1545	100.0%	160	10.4%	530	34.3%	420	27.2%	290	18.8%	135	8.7%	10	0.6%
8793	STRUCTURAL-METAL	280	100.0%	50	17.9%	95	33.9%	70	25.0%	50	17.9%	20	7.1%	X	X
8795	GLAZIERS	270	100.0%	65	24.1%	115	42.6%	40	14.8%	30	11.1%	15	5.6%	5	1.9%
8798	LABOUR-OTHER CONSTR	3285	100.0%	1130	34.4%	1060	32.3%	515	15.7%	390	11.9%	180	5.5%	15	0.5%
8799	OTHER CONSTR-NEC	1720	100.0%	345	20.1%	595	34.6%	405	23.5%	230	13.4%	110	6.4%	20	1.2%
ASSIGNED		635	100.0%	135	21.3%	170	26.8%	100	15.7%	80	12.6%	120	18.9%	35	5.5%
TOTAL		30210	100.0%	5715	18.9%	9780	32.4%	7165	23.7%	4495	14.9%	2820	9.3%	240	0.8%

SOURCE : 1986 CENSUS (CAT.93–112)

distribution more specifically, almost one third of construction labourers were between 15 and 24, and over 60% of the labour force in the following were under 35 years of age: plasters, roofers, glaziers, other construction labourers, and paving and surfacing workers. Almost 70% of those in electrical related trades were between 25 and 44. Forepersons tended to be in the middle age category with less than 30% under 34 years of age.

One would expect physical demands and experience to influence the age composition of the various trades. To some extent, this is evident from the above data. For example, the physical demands from lifting, climbing, etc. on plasterers and roofers would make such occupations short-lived and limited to younger workers. Industry spokespeople stress that physical wear on the body occasionally forces workers into another line of work at an early age. The experience required to be fully competent in a trade would obviously imply forepersons are older. In contrast, labourers are younger possibly because they are in the process of learning and developing skills that they can use to move into new and more skilled employment opportunities. In sum, these demographics suggests that the physical demands may limit some occupations to younger, more physically capable workers, while other occupations, specifically excavating related and supervisory,

are more open for older, more experienced workers. Also, it is possible that younger workers find it necessary to work at some of the lower skilled, labouring occupations before they can advance to some of the more skilled trades or managerial positions. Again, it should be noted that the source of these numbers is the 1986 census, and it is likely that more current figures would show an older labour force, reflecting the general trend.

IX. Growth Rates

Chart 5a compares the growth rate of the construction sector with the economic growth rate of Nova Scotia over the past decade. It is evident that growth in the construction sector is much more volatile than the Province's economic growth. Construction sector growth was over 20% in 1982 and 1983 and as high as 30% in 1985. Over the decade, the construction sector contracted for only three years (1980, 1984, & 1987); however, the decline was severe (approximately - 20%) in 1984. In comparison, total economic growth in the Province was much more stable, contracting only one year (1982) over the decade. Further, growth in the construction sector deviated significantly from the rest of the economy during the years 1982 through 1985. Using Chart 5b and comparing the growth rates of the Nova Scotian with Canadian construction sector, there appears to be some similarity in the direction (positive or negative) of the growth. However, while the growth rate for the Nova Scotia construction sector was volatile, the growth rate for the Canadian construction sector was generally stable. In summary, those interested in entering the Nova Scotia construction sector should be cautioned that this sector is more cyclical and much more sensitive to changes in economic and social variables than other

sectors in Nova Scotia and the construction sector in other Provinces.

CHART 5a
REAL GROWTH RATES FOR THE CONSTRUCTION SECTOR IN CANADA AND NOVA SCOTIA

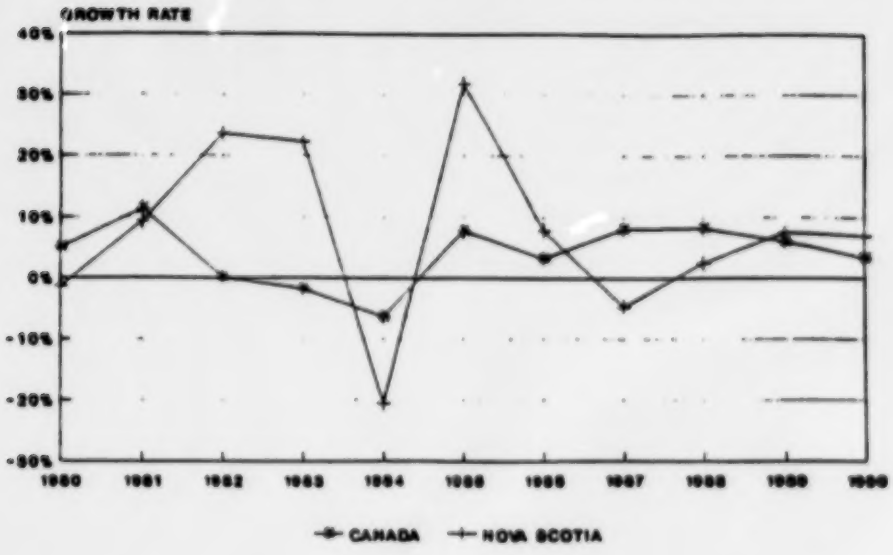
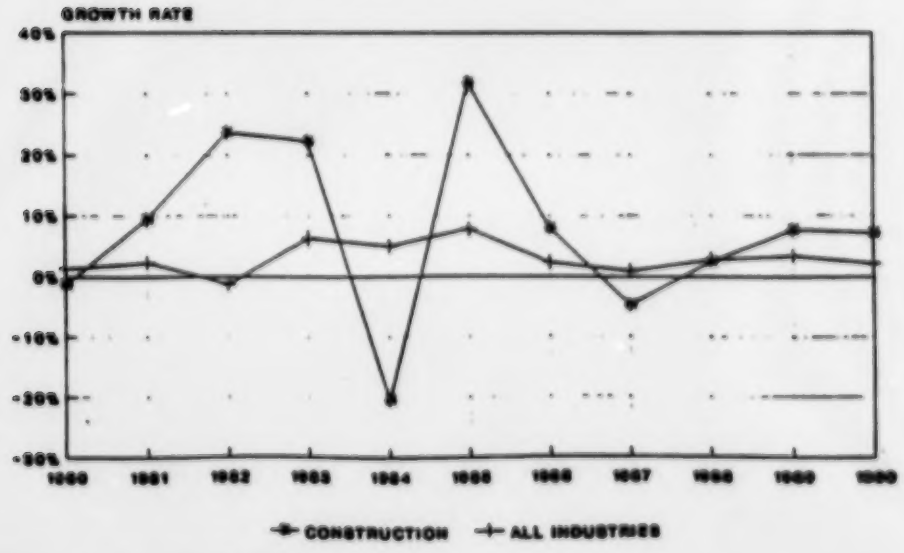


CHART 5b
REAL ECONOMIC GROWTH RATES FOR NOVA SCOTIA



SOURCE : CONFERENCE BOARD OF CANADA

X. Factors Affecting Construction Activity

The level of construction activity is influenced by several economic variables including the general level of economic activity, disposable income, interest rates, inflation, oil prices, the value of the Canadian dollar, and government policies. As the general level of economic activity falls, employment and disposable income also fall. Economic variables can also affect construction activity differently. For example, external factors, such as the price of oil, dampen residential construction by escalating the cost of construction and other supplies. Further, the inflationary impact of higher oil prices may also induce interest rates to rise, setting off a chain of reactions leading to a negative effect on the construction sector.

However, the effect on some types of non-residential construction may be mixed. Some of the negative impacts may be counterbalanced from increased economic activity in other areas of non-residential construction. On the positive side, higher oil prices can induce capital projects (such as platforms, refineries) in oil and gas. Also, increased provincial royalties could mean more funds are available to spend on infrastructure (eg. roads, sewage systems,

etc.), institutions (eg. hospitals, schools, etc.), and other construction projects. On the negative side, higher oil prices increase the cost of some inputs and may prevent the expansion of plants and warehouses and, therefore, could decrease activity in non-residential construction.

In addition to economic variables, the expenditure and type of construction undertaken could be affected by changes in demographics. Over the past few years, a high divorce rate and growing desire for independent living among younger people have increased the demand for residential housing. However, as the younger age population declines, the emphasis may shift to satisfying the tastes of the middle-aged. A declining younger population could mean less demand for new residential building and more expenditure on repairs and renovations. Also, a higher housing vacancy rate may force a more competitive market where landlords compete through improving existing structures. This could affect the demand for certain occupations in the construction sector. For example, painters and finish carpenters may become more in demand, while the demand for excavating occupations and concrete finishers may decline.

With an increasing elderly population, institutional construction may increase as more nursing homes and other types of senior housing are required to provide medical attention and to house the elderly. In addition to new structures, improving accessibility (eg. wheelchair ramps, larger washrooms, etc.) will likely become more important as the number of disabled people will likely increase as the population ages. In addition, human rights legislation may force more and more buildings to be altered in order to accommodate the disabled.

Technology affects construction in two ways. First, some technological developments reduce the demand for tradespeople. Pre-assembled components such as ceiling units, switchboards, kitchen cupboards, bathroom vanities, etc., as well as the promotion and simplification of do-it-yourself kits, reduce the demand for skilled tradespeople. Conversely, however, technology can increase the demand for certain tradespeople. For example, new types of building materials, more complex and sophisticated ventilation systems, a trend for brick patios, etc., all create additional demands for tradespeople. It is therefore important that the tradesperson keep up to date with technological developments so that he/she can respond to the demands in the industry.

In sum, a strong degree of interrelatedness exists among several of the key economic variables. The point is that a change in any one may very well set off a chain of reactions, leading to a rise or fall in construction activity. Demographics play a role in determining the composition of construction activity. Technology can change the structure of construction activity as well as dictating the skills and trades that will be in demand. Together, these economic, demographic, and technological factors will determine the specific skill requirements and the level of employment that will be required in the construction sector.

XI. Summary

It is evident that the construction sector plays an important role in the Nova Scotia economy both directly and indirectly. For those choosing a career, the construction sector offers a number of opportunities. Construction projects and occupations are varied. Generally speaking, those entering the construction sector will likely be involved in on - site activity since this comprises over two thirds of the occupations. Although one might expect working in the construction sector means working directly at the site; surprisingly, almost a third of those employed in this sector are not working at construction trades, as several jobs are clerical or managerial related. However, the majority of jobs are construction trades, with carpenters being the single largest group, representing almost a quarter of the employment.

Anyone considering a trade in the construction sector should be aware of the seasonality factor, reflected by the variable employment levels and weekly hours for certain months of the year. Although the majority are employed year round, some people become unemployed during the colder months of the year.

Salary levels for trades vary, with those occupations requiring experience and responsibility, such as forepersons, ranking highest. Electrical related trades also ranked high on the list of salaries of tradespeople. However, it is reasonable to expect the monetary rewards to be highest in the more managerial related construction occupations.

The age distribution of the construction trades suggest that some people use construction trades as stepping stones to other branches of construction. Also, it is possible that the physical demands of some trades limit the occupations to younger, more physically capable workers.

Although men dominate the trades and their average salary is significantly higher, more women appear to be entering construction trades. In construction trades, men outnumber women in the 15-24 age category; however, the proportion of women construction workers in this age category is higher than the corresponding proportion of men.

Finally, individuals interested in a construction occupation should be prepared for the possibility of demand shifts. In addition to the construction sector being influenced by economic factors,

demographics and technology will also influence the required skills and composition of the construction workforce. Therefore, those interested in a career in this sector should observe and adjust to signals in the economy and keep up to date and expand their skills as dictated by socio-economic trends.

APPENDIX A

TOTAL EMPLOYMENT IN CONSTRUCTION INDUSTRIES BY OCCUPATION

CCDO	TITLE	EMPLOYMENT	PERCENTAGE
1130	General Managers	168	0.7%
1135	Managers–Financial	20	0.1%
1137	Sales Mgmt Occs	128	0.6%
1141	Purchasing Mgmt Occs	10	0.0%
1142	Services Mgmt Occs	25	0.1%
1143	Production Mgmt Occs	20	0.1%
1145	Mgmt Occs–Constr	505	2.2%
1149	Other Management–Nec	248	1.1%
1171	Financial Officers	219	1.0%
1174	Personnel + Rel Off.	5	0.0%
1175	Purchasing Officers	7	0.0%
1176	Inspectors–Non–Gov	5	0.0%
1179	Occs In Mgmt–Nec	36	0.2%
2117	Physical Sc. Tech.	5	0.0%
2141	Architects	10	0.0%
2143	Civil Engineers	221	1.0%
2147	Mechanical Engineers	15	0.1%
2160	Supervisors–Arch+Eng	5	0.0%
2161	Surveyors	133	0.6%
2163	Draughting Occs	55	0.2%
2164	Architectural Techn	5	0.0%
2165	Engineering Techn	56	0.2%
2169	Other Occs–Arch+Eng	4	0.0%
2183	Systems Analysts	15	0.1%
2349	Occs In Law–Nec	5	0.0%
2511	Ministers	5	0.0%
2797	Instructors–Nec	5	0.0%
3135	Nursing Attendants	5	0.0%
3156	Med Lab Techn	5	0.0%
3313	Designers	10	0.0%
3314	Advert+Illustr Art	15	0.1%
4111	Secretaries + Steno	367	1.6%
4113	Typists + Clerk–Typ	25	0.1%
4130	Superv–Bookkeeping	15	0.1%
4131	Bookkeepers	673	3.0%
4143	Edp Equip Operators	46	0.2%
4150	Superv–Record+Sched	10	0.0%
4151	Production Clerks	5	0.0%
4153	Shipping Clerks	10	0.0%
4155	Stock Clerks	36	0.2%
4157	Weighers	20	0.1%

CCDO TITLE	EMPLOYMENT	PERCENTAGE
4159 Record+Distr–Nec	5	0.0%
4161 Lib + File Clerks	10	0.0%
4171 Receptionists	31	0.1%
4173 Mail + Postal Clerks	5	0.0%
4175 Telephone Operators	10	0.0%
4177 Messengers	5	0.0%
4179 Information Occs–Nec	5	0.0%
4190 Superv–Clerical–Nec	2	0.0%
4192 Claim Adjusters	5	0.0%
4197 Gen Off Clerks	76	0.3%
4199 Other Clerical–Nec	25	0.1%
5130 Superv–Sales+Com	10	0.0%
5131 Technical Sales	5	0.0%
5133 Commercial Traveller	51	0.2%
5135 Salespersons	97	0.4%
5170 Superv–Sales+Serv	5	0.0%
5193 Route Drivers	5	0.0%
6111 Fire–Fighting	5	0.0%
6115 Guards+Security Occs	117	0.5%
6121 Chefs + Cooks	5	0.0%
6125 Food+Bev Serv. Occs	5	0.0%
6130 Superv–Accomodation	20	0.1%
6190 Superv–Other Serv	15	0.1%
6191 Janitors	71	0.3%
6198 Labour Services	5	0.0%
7195 Nursery Workers	515	2.3%
7197 Farm–Mach Operator	20	0.1%
7199 Other Farming–Nec	5	0.0%
7513 Timber Cutting	66	0.3%
7710 Foremen/women–Mining	15	0.1%
7711 Rotary Well–Drilling	41	0.2%
7713 Other Drilling	51	0.2%
7715 Blasting Occs	36	0.2%
7717 Mining–Cutting	15	0.1%
7718 Labour–Mining	10	0.0%
8111 Crushing + Grinding	5	0.0%
8133 Metal Heat–Treating	5	0.0%
8141 Metal Extruding	5	0.0%
8148 Labour–Metal Process	5	0.0%
8150 Foreperson–Glass+St.	7	0.0%
8151 Furnace+Kiln Wrkrs	5	0.0%
8153 Separating–Glass	61	0.3%
8155 Forming–Glass	15	0.1%
8176 Inspecting–Chemicals	5	0.0%
8213 Baking	5	0.0%
8295 Hide + Pelt Process	5	0.0%

CCDO TITLE	EMPLOYMENT	PERCENTAGE
8313 Machinist	15	0.1%
8315 Machine Tool Op	20	0.1%
8330 Foreperson–Metal Shp	61	0.3%
8333 Sheet–Metal Workers	204	0.9%
8335 Welding	182	0.8%
8337 Boilermakers	17	0.1%
8339 Metal Shaping–Nec	5	0.0%
8371 Cutting+Shaping–Glas	5	0.0%
8379 Glass+Clay Mach–Nec	15	0.1%
8510 Foreperson–Fab+Assem	5	0.0%
8523 Ind Mach Fab+Ass–Nec	31	0.1%
8529 Other Met Prod–Nec	10	0.0%
8530 Foreperson–Elec Fab	5	0.0%
8531 Elec Equip Fab+Assem	5	0.0%
8533 Elec Equip Repair	189	0.8%
8534 Electronic Equip Fab	10	0.0%
8535 Electronic Occs–Nec	5	0.0%
8536 Inspecting–Elec Eq	10	0.0%
8538 Labour–Elec Equip	5	0.0%
8540 Foreperson–Wood Prod	10	0.0%
8541 Cabinet Makers	66	0.3%
8549 Fab Wood Product–Nec	10	0.0%
8551 Patternmaking–T+L+F	5	0.0%
8563 Sewing Machine Occs	5	0.0%
8569 Fab Tex+Lthr+Fur–Nec	5	0.0%
8580 Foreperson–Mechanics	13	0.1%
8581 Auto Mechanics	66	0.3%
8584 Industrial Mechanics	359	1.6%
8588 Precision Inst Rep	10	0.0%
8589 Other Mechanics–Nec	49	0.2%
8590 Foreperson–Prod Fab	10	0.0%
8592 Marine Craft Fab	25	0.1%
8710 Foreperson–Excav.	255	1.1%
8711 Excavating+Grading	1091	4.8%
8713 Paving+Surfacing	227	1.0%
8718 Labour–Excavating	67	0.3%
8719 Excavating–Nec	56	0.2%
8730 Foreperson–Elec Pow.	219	1.0%
8731 Power Line Workers	31	0.1%
8733 Constr Electricians	1055	4.7%
8735 Wire Communications	5	0.0%
8736 Inspect–Elec Power	5	0.0%
8738 Labour–Elec Power	5	0.0%
8739 Electrical Power–Nec	15	0.1%
8780 Foreperson–Othr Con.	1728	7.7%
8781 Carpenters	4358	19.3%

CCDO TITLE	EMPLOYMENT	PERCENTAGE
8782 Masons	581	2.6%
8783 Concrete Finishing	117	0.5%
8784 Plasterers	357	1.6%
8785 Painters	928	4.1%
8786 Insulating	122	0.5%
8787 Roofing	255	1.1%
8791 Pipefitting+Plumbing	653	2.9%
8793 Structural-Metal	127	0.6%
8795 Glaziers	107	0.5%
8796 Inspecting-Constr	11	0.0%
8798 Labour-Other Constr	1850	8.2%
8799 Other Constr-Nec	907	4.0%
9159 Water Trans-Nec	5	0.0%
9175 Truck Drivers	785	3.5%
9311 Hoisting Occs	122	0.5%
9313 Longshore Workers	41	0.2%
9315 Material-Handling	36	0.2%
9318 Labour-Mat-Handling	25	0.1%
9530 Foreperson-Utilities	18	0.1%
9539 Utilities Eq Op-Nec	36	0.2%
9910 Superv+Foreperson-Ne	10	0.0%
9918 Other Mgmt Occs-Nec	204	0.9%
9919 Other Occs-Nec	71	0.3%
TOTAL	22586	100.0%

SOURCE : COPS DEMAND MODEL, 1991